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REMARKS

By way of this Response, claim 19 has been amended. Claims 1-21 remain present and are rejected in this application. Applicants respectfully request reconsideration and allowance of the present application.

In the present (non-final) Office Action, the Examiner rejected claim 19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner noted that claim 19 does not provide an antecedent basis for "the serial port." Applicants have amended claim 19 to depend from claim 18, which provides proper antecedent basis for "the serial port," thus rendering this rejection moot.

The Examiner also rejected claims 1-3, 7, and 8 under 35 U.S.C. § 102(b) as being clearly anticipated by Lyons (U.S. Patent No. 4,181,939) (hereinafter "Lyons"). The following rejections were presented under 35 U.S.C. § 103(a): claim 4 was rejected as being unpatentable over Lyons, as applied to claims 1-3, 7, and 8 above, further in view of Miesterfeld et al. (U.S. Patent No. 4,739,323) (hereinafter "Miesterfeld"); claims 5, 9-11, 14, and 15 were rejected as being unpatentable over Lyons, as applied to claims 1-3, 7, and 8 above, further in view of Applicants' admitted prior art, at page 4 of the specification; claim 12 was rejected as being unpatentable over Lyons, further in view of Applicants' admitted prior art, at page 4 of the specification, as applied to claim 11 above, and further in view of Miesterfeld; claim 6 was rejected as being unpatentable over Lyons, as applied to claims 1-3, 7, and 8 above, further in view of Dao (U.S. Patent No. 6,304,803) (hereinafter "Dao"); claims 13, 16-18, 20, and 21 were rejected as being unpatentable over Lyons, in view of Applicants' admitted prior art, at page 4 of the specification, as applied to claim 9 above, and further in view of Dao; and claim 19 was rejected as being unpatentable over Lyons, in view of Applicants' admitted prior art, at page 4 of the specification, further in view of Dao, as applied to claim 16 above, and further in view of Miesterfeld. Applicants respectfully traverse these rejections for the reasons presented below.

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Before discussing the rejected claims and the applied references, it is important to appreciate Applicants' claimed invention and the advantages realized therefrom. The invention provides for a pulse count accumulator that includes a plurality of counters and a communication port. According to the present invention, the plurality of counters are each coupled to a different one of a plurality of actuators and a value of each of the counters corresponds to a position of a corresponding one of the plurality of actuators. The communication port is in communication with the plurality of counters and provides the value of each of the plurality of counters to an external device through the communication port. The result is a pulse count system that has the advantages of being practical, economical, and capable of handling an increased number of actuators, while operating at frequencies that do not greatly increase EMI considerations.

With regard to the rejection of claims 1-3, 7, and 8 under 35 U.S.C. § 102(b) as being anticipated by Lyons, the Lyons reference fails to teach each and every limitation of claim 1. At the outset, Applicants note that Lyons is primarily directed to a device for providing communication between a radiation detector array and a general purpose computer and to receive accumulated scintillation counts from the array of detectors and deposit the same in computer memory in a manner which minimizes subsequent data manipulation. Lyons achieves this by accumulating scan data from a number of detectors and providing that data to a computer for analysis and display.

Lyons does not appear to teach a pulse count accumulator comprising a plurality of counters, wherein an input of each counter is coupled to a different one of a plurality of actuators, and wherein a value of each of the counters corresponds to a position of a corresponding one of the plurality of actuators, and a communication port in communication with the plurality of counters, wherein the value of each of the plurality of counters is provided to an external device through the communication port.

The Examiner stated that "Lyons teaches an arrangement wherein actuation of motors (839 and 849) is counted (counters 822 and 822'; col. 17, lines 46-51) and accumulated (810) for transmission as requested to an external microprocessor

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(computer 840) through a communication portion (UARTs 879 and 870, and bus interface 843)." The Examiner specifically cited Figure 11 for showing such features. Figure 11 shows motor controllers 822 and 822' receiving instructions from UART 879 and transmitting those instructions to motor drivers 839 and 849, which, in turn, pass information on to the actual drive motors. Lyons does not appear to disclose drive motors or motor drivers 839 and 849 providing information as an input to motor controllers 822 and 822', such that the value of counters 822 and 822' corresponds to the position of motor drivers 839, 849, or the drive motors themselves. Lyons also does not appear to disclose that motor controllers 822 and 822' treat any position of an actuator as an input. To the contrary, Lyons discloses an operation in which control signals received from UART 870 are used to drive motor drivers 839 and 849, which, in turn, drive the motors.

In addition, while Lyons appears to disclose the value of the counters 822 and 822' being provided to an external device via a communication port, this is only when the device is operating in a test mode designed to test the operation of the counters themselves. Operation of this test mode is described in column 17, line 46 through column 18, line 3 of Lyons, in which it appears that the only thing tested and transmitted via a communication port is the actual value of the counters themselves. Lyons does not appear to teach that the value in the counters in this test mode corresponds to any actuator position. Instead, it appears that, in the Lyons test mode, the data in the counters corresponds to the test count data that was sent to the counters from computer 840 via UART 870.

In order to anticipate a claim, a reference must teach each and every limitation of the claim. Because Lyons fails to teach "a plurality of counters, wherein an input of each counter is coupled to a different one of a plurality of actuators, and wherein a value of each of the counters corresponds to a position of a corresponding one of the plurality of actuators; and a communication port in communication with the plurality of counters, wherein the value of each of the plurality of counters is provided to an

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external device through the communication port," Lyons does not teach each and every element of independent claim 1. For this reason, the rejection of independent claim 1 under 35 U.S.C. § 102(b) as being anticipated by Lyons, is improper and should be withdrawn. Because independent claim 1 is allowable, claims 2-8, which depend therefrom, are also allowable for at least this reason.

With respect to independent claim 9, the Examiner states that claim 9 is unpatentable under 35 U.S.C. § 103(a) over Lyons, as applied to claims 1-3, 7, and 8 above, further in view of Applicants' admitted prior art, at page 4 of the instant specification. Applicants' claim 9 likewise recites the features "a plurality of counters, wherein an input of each counter is coupled to a different one of a plurality of actuators, and wherein a value of each of the counters corresponds to a position of a corresponding one of the plurality of actuators; and a communication port in communication with the plurality of counters, wherein the value of each of the plurality of counters is provided to an external device through the communication port" found in claim 1, in addition to a plurality of actuators, each including a motor and a gear reduction. Applicants' alleged admission cited by the Examiner does not teach or suggest the features of claim 1 missing from Lyons, as discussed above.

Because the combination of Lyons with the Applicants' alleged admission does not teach or suggest each and every element of claim 9, the rejection under 35 U.S.C. § 103(a) is improper and should be withdrawn.

Because claims 10-15 depend on independent claim 9, which is allowable, the rejection of claims 10-15 is also improper and should also be withdrawn for at least this reason.

The Examiner also rejected independent claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Lyons in view of Applicants' admitted prior art, at page 4 of the instant specification, as applied to claim 9 above, further in view of Dao. However, Applicants' claim 16 similarly recites "a plurality of counters, wherein an input of each counter is coupled to a different one of a plurality of actuators, and wherein a value of

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each of the counters corresponds to a position of a corresponding one of the plurality of actuators; and a communication port in communication with the plurality of counters, wherein the value of each of the plurality of counters is provided to an external device through the communication port." Dao discloses a front heating, ventilating, and air conditioning (HVAC) system that communicates with a rear HVAC system. Neither Dao nor Applicants' alleged admission teaches or suggests the features of claim 1 missing from Lyons, as discussed above.

Because Lyons, in combination with Dao and Applicants' alleged admission, does not teach or suggest each and every element of independent claim 16, the rejection of claim 16 under 35 U.S.C. § 103(a) is improper and should be withdrawn. Because claims 17-21 depend on independent claim 16, which is allowable, the rejection of claims 17-21 is also improper and should also be withdrawn for at least this reason.

Finally, the Examiner also rejected dependent claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Lyons, as applied to claims 1-3, 7, and 8, and further in view of Miesterfeld. However, Miesterfeld does not teach or suggest the claimed features of independent claim 1, which are missing from Lyons, as discussed above. Because Lyons, in combination with Miesterfeld, does not teach each and every element of claim 4, the rejection of claim 4 under 35 U.S.C. § 103(a) is improper and should be withdrawn for at least this additional reason.

By way of the foregoing discussion, Applicants have demonstrated that claims 1-21 are not anticipated by Lyons and would not have been obvious in view of the cited combinations of Lyons, Miesterfeld, and Dao. Accordingly, the rejections of claims 1-21 under 35 U.S.C. §§ 102(b) and 103(a) should be withdrawn.

Applicants have reviewed the remaining prior art of record which was not applied to the claims, and agree with the Examiner that such references do not teach or suggest Applicants' claimed invention.

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Applicants submit that this reply is fully responsive to the above-referenced Office Action, and that the claims are in condition for allowance, such allowance being respectfully requested.

CONCLUSION

If the Examiner has any questions or comments with respect to this reply, the Examiner is encouraged to contact the undersigned at 616/949-9610.

Respectfully submitted,

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